CHAPTER 9C. MARKINGS

Section 9C.01 Functions of Markings

Support:

Markings indicate the separation of the lanes for road users, assist the bicyclist by indicating assigned travel paths, indicate correct position for traffic control signal actuation, and provide advance information for turning and crossing maneuvers.

Section 9C.02 General Principles

Guidance:

Bikeway design guides should be used when designing markings for bicycle facilities (see Section 9A.05).

Standard:

Markings used on bikeways shall be retroreflectorized.

Guidance:

Pavement marking symbols and/or word messages should be used in bikeways where appropriate. Consideration should be given to selecting pavement marking materials that will minimize loss of traction for bicycles under wet conditions.

Standard:

The colors, width of lines, patterns of lines, and symbols used for marking bicycle facilities shall be as defined in Sections 3A.04, 3A.05, and 3B.22.

Support:

Figures 9B-7 and 9C-1 through 9C-8 show examples of the application of lines, word messages, and symbols on designated bikeways.

SHA See Maryland State Highway Administration's "Bicycle and Pedestrian Design Guidelines" for applications of lines, word messages, and symbols on designated bikeways. This document can be obtained from the Maryland State Highway Administration's Office of Traffic & Safety, Traffic Development & Support Division (TDSD) at the address shown on Page i.

Option:

A dotted line may be used to define a specific path for a bicyclist crossing an intersection (see Figure 9C-1) as described in Sections 3A.05 and 3B.08.

Section 9C.03 Marking Patterns and Colors on Shared-Use Paths

Option:

Where shared-use paths are of sufficient width to designate two minimum width lanes, a solid yellow line may be used to separate the two directions of travel where passing is not permitted, and a broken yellow line may be used where passing is permitted (see Figure 9C-2).

Guidance:

Broken lines used on shared-use paths should have the usual 1-to-3 segment-to-gap ratio. A nominal 0.9 m (3 ft) segment with a 2.7 m (9 ft) gap should be used.

If conditions make it desirable to separate two directions of travel on shared-use paths at particular locations, a solid yellow line should be used to indicate no passing and no traveling to the left of the line.

Markings as shown in Figure 9C-2 should be used at the location of obstructions in the center of the path, including vertical elements intended to physically prevent unauthorized motor vehicles from entering the path.

Option:

SHA Rumble strips that may be used on shared use paths to alert users that they are approaching an unexpected roadway intersetions. See Maryland State Highway Administration's "Bicycle and Pedestrian Design Guidelines" for details. This document can be obtained from the Maryland State Highway Administration's Office of Traffic & Safety, Traffic Development & Support Division (TDSD) at the address shown on Page i.

Figure 9C-1. Example of Intersection Pavement Markings—Designated Bicycle Lane with Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway

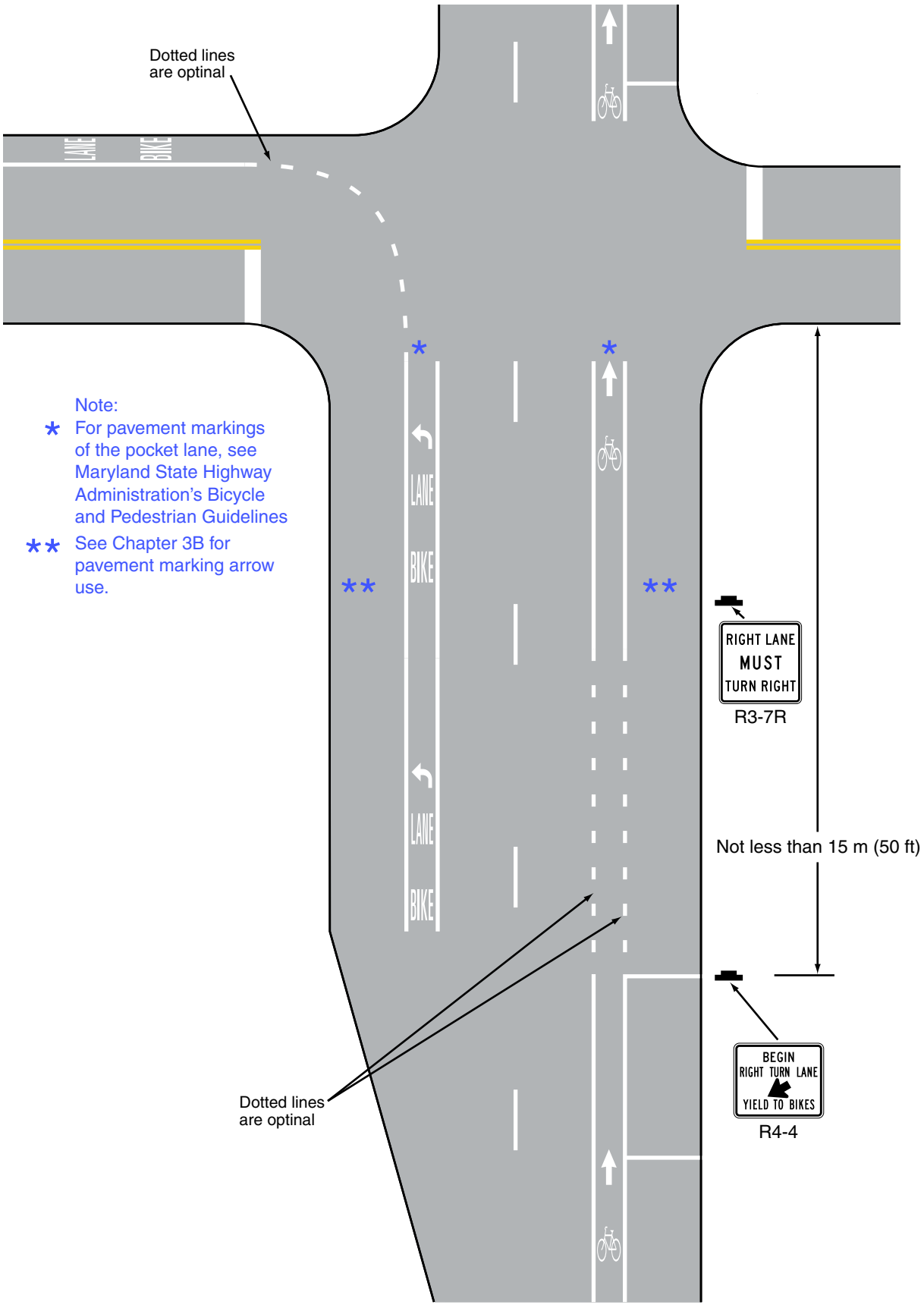
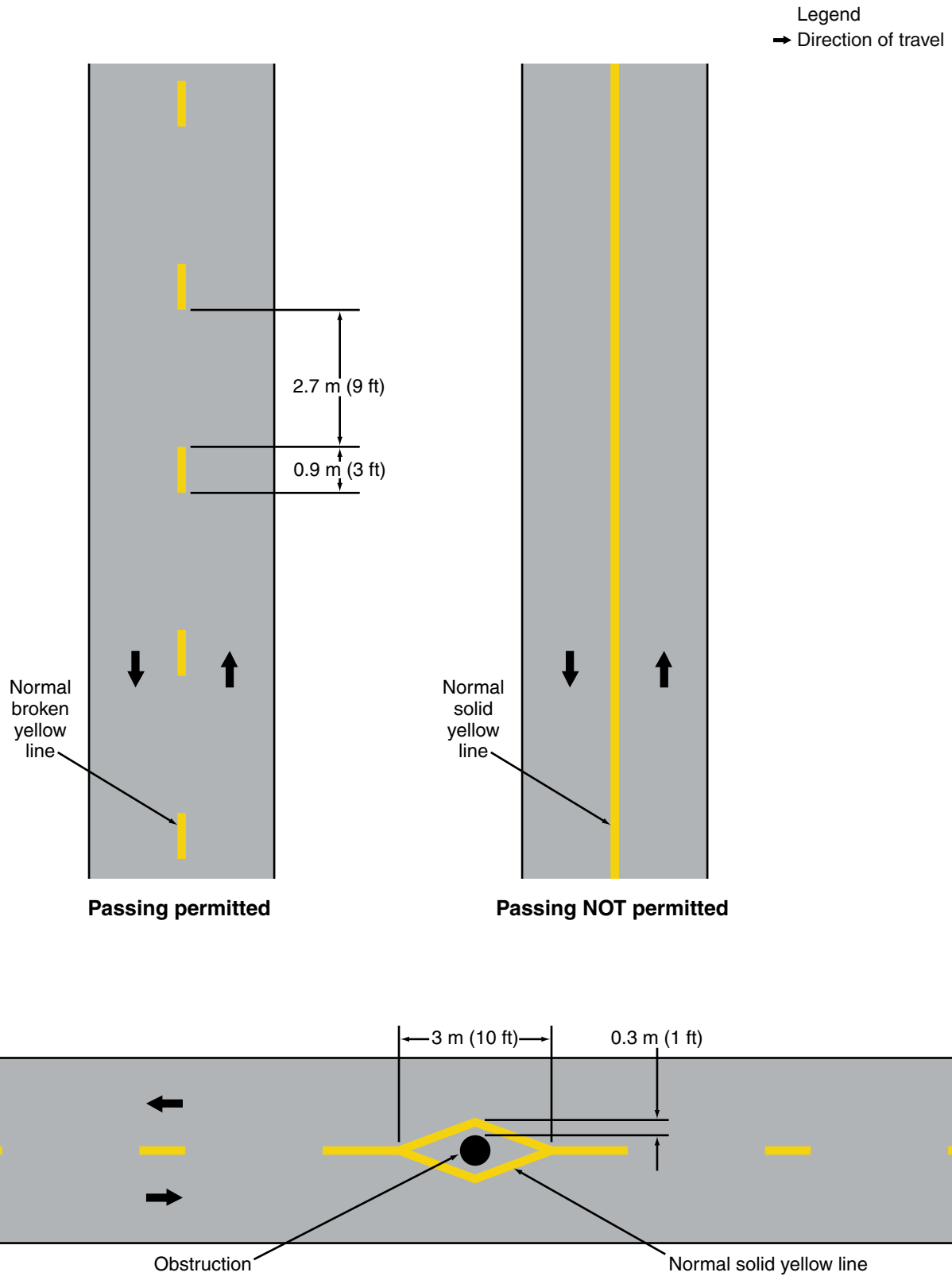


Figure 9C-2. Examples of Centerline Markings for Shared-Use Paths (Two-Way Traffic)

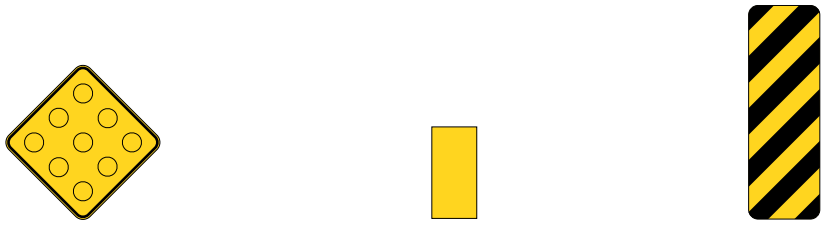


Option:

A solid white line may be used on shared-use paths to separate different types of users. The R9-7 sign (see Figure 9B-2) may be used to supplement the solid white line.

Smaller size letters and symbols may be used on shared-use paths. Where arrows are needed on shared-use paths, half-size layouts of the arrows may be used (see Section 3B.19).

Fixed objects adjacent to shared-use paths may be marked with object markers (Type 1, 2, or 3).



Standard:

All object markers shall be retroreflective.

Markers such as those described in Section 3C.01 shall also be used on shared-use paths, if needed.

Obstructions in the traveled way of a shared-use path shall be marked with retroreflectorized material or appropriate object markers.

On Type 3 markers, the alternating black and retroreflective yellow stripes shall be sloped down at an angle of 45 degrees toward the side on which traffic is to pass the obstruction.

Section 9C.04 Markings For Bicycle Lanes

Guidance:

Longitudinal pavement markings should be used to define bicycle lanes.

Support:

Pavement markings designate that portion of the roadway for preferential use by bicyclists. Markings inform all road users of the restricted nature of the bicycle lane.

Examples of bicycle lane markings at right-turn lanes are shown in Figures 9C-1, 9C-3, and 9C-4. Examples of pavement markings for bicycle lanes on a two-way street are shown in Figure 9C-5. Pavement symbols and markings for bicycle lanes are shown in Figure 9C-6.

Examples of bicycle lane markings at right-turn lanes are shown in Figures 9C-1, 9C-3, and 9C-4. Examples

Standard:

If used, the bicycle lane symbol marking (see Figure 9C-6) shall be placed immediately after an intersection and at other locations as needed. The bicycle lane symbol marking shall be white. If the bicycle lane symbol marking is used in conjunction with other word or symbol messages, it shall precede them.

If the word or symbol pavement markings shown in Figure 9C-6 are used, Bicycle Lane signs (see Section 9B.04) shall also be used, but the signs need not be adjacent to every symbol to avoid overuse of the signs.

A through bicycle lane shall not be positioned to the right of a right turn only lane.

Support:

A bicyclist continuing straight through an intersection from the right of a right turn lane would be inconsistent with normal traffic behavior and would violate the expectations of right-turning motorists.

Guidance:

When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right turn lane. Through bicycle lane markings should resume to the left of the right turn only lane.

An optional through-right turn lane next to a right turn only lane should not be used where there is a through bicycle lane. If a capacity analysis indicates the need for an optional through-right turn lane, the bicycle lane should be discontinued at the intersection approach.

Posts or raised pavement markers should not be used to separate bicycle lanes from adjacent travel lanes.

Support:

Using raised devices creates a collision potential for bicyclists by placing fixed objects immediately adjacent to the travel path of the bicyclist. In addition, raised devices can prevent vehicles turning right from merging with the bicycle lane, which is the preferred method for making the right turn. Raised devices used to define a bicycle lane can also cause problems in cleaning and maintaining the bicycle lane.

Standard:

Bicycle lanes shall not be provided on the circular roadway of a roundabout intersection.

Section 9C.04A Share The Road Pavement Marking SHA

Guidance:

Utilizing a shared roadway pavement marking as shown in Figure 9C-2a should only be considered after consultation with Maryland State Highway Administration's Bicycle and Pedestrian Coordinator and the Assistant District Engineer for Traffic.

If used, the shared roadway pavement marking should be placed:

a. 3.35 m (11 ft) from the face of the curb when used adjacent to a parking lane;
b. in the center of the travel lane when no used adjacent to a parking lane;
c. at 50 m (150 ft) intervals; and
d. at intersections.

Section 9C.05 Bicycle Detector Symbol

Option:

A symbol (see Figure 9C-7) may be placed on the pavement indicating the optimum position for a bicyclist to actuate the signal.

An R10-22 sign (see Section 9B.12 and Figure 9B-2) may be installed to supplement the pavement marking.

Section 9C.06 Pavement Markings for Obstructions

Guidance:

In roadway situations where it is not practical to eliminate a drain grate or other roadway obstruction that is inappropriate for bicycle travel, white markings applied as shown in Figure 9C-8 should be used.

Figure 9C-2a. Example of Share the Road Pavement Marking SHA

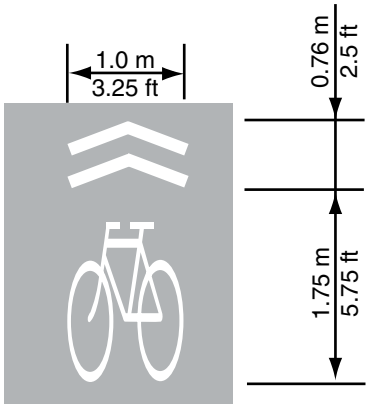


Figure 9C-3. Example of Bicycle Lane Treatment at a Right Turn Only Lane SHA

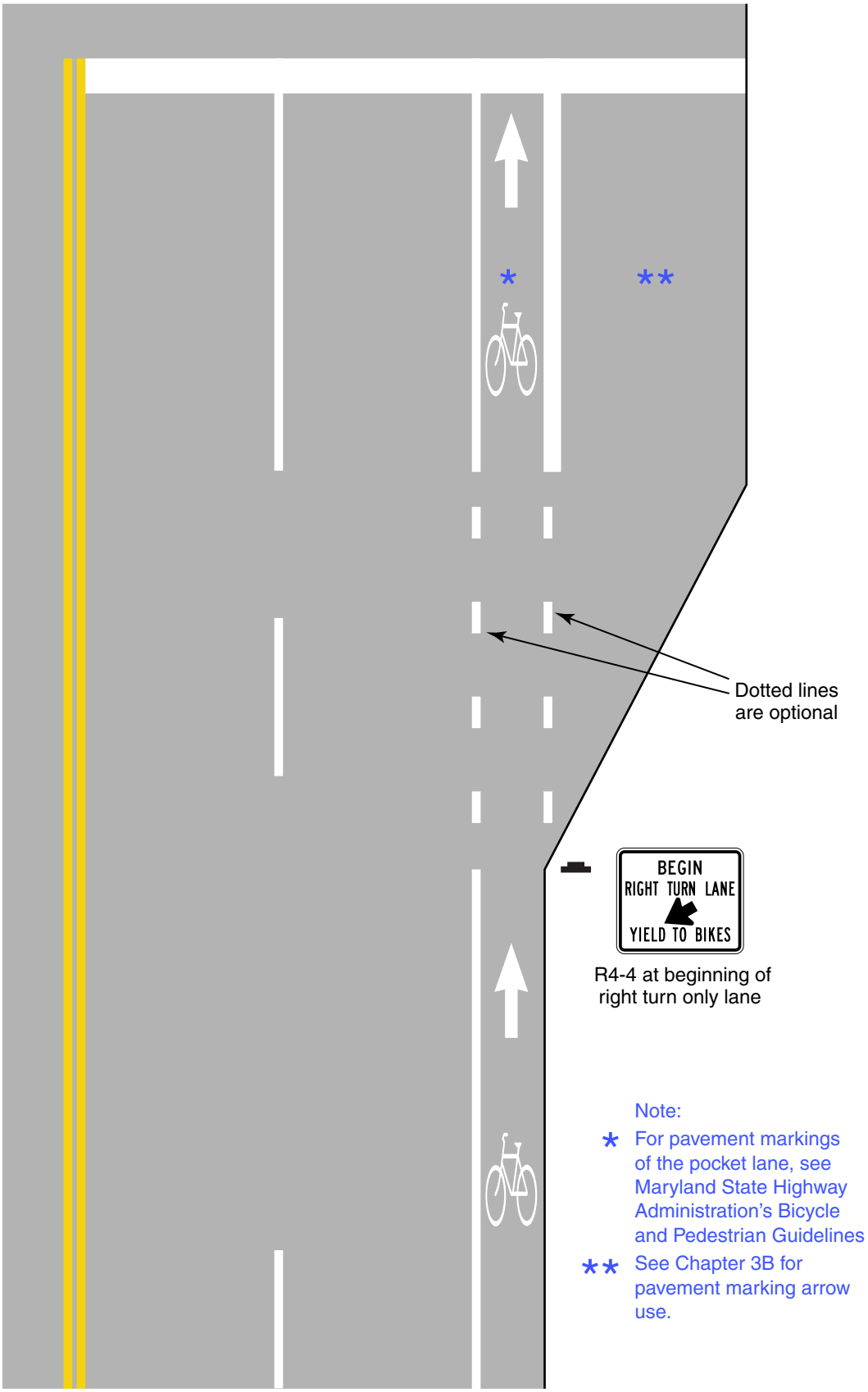
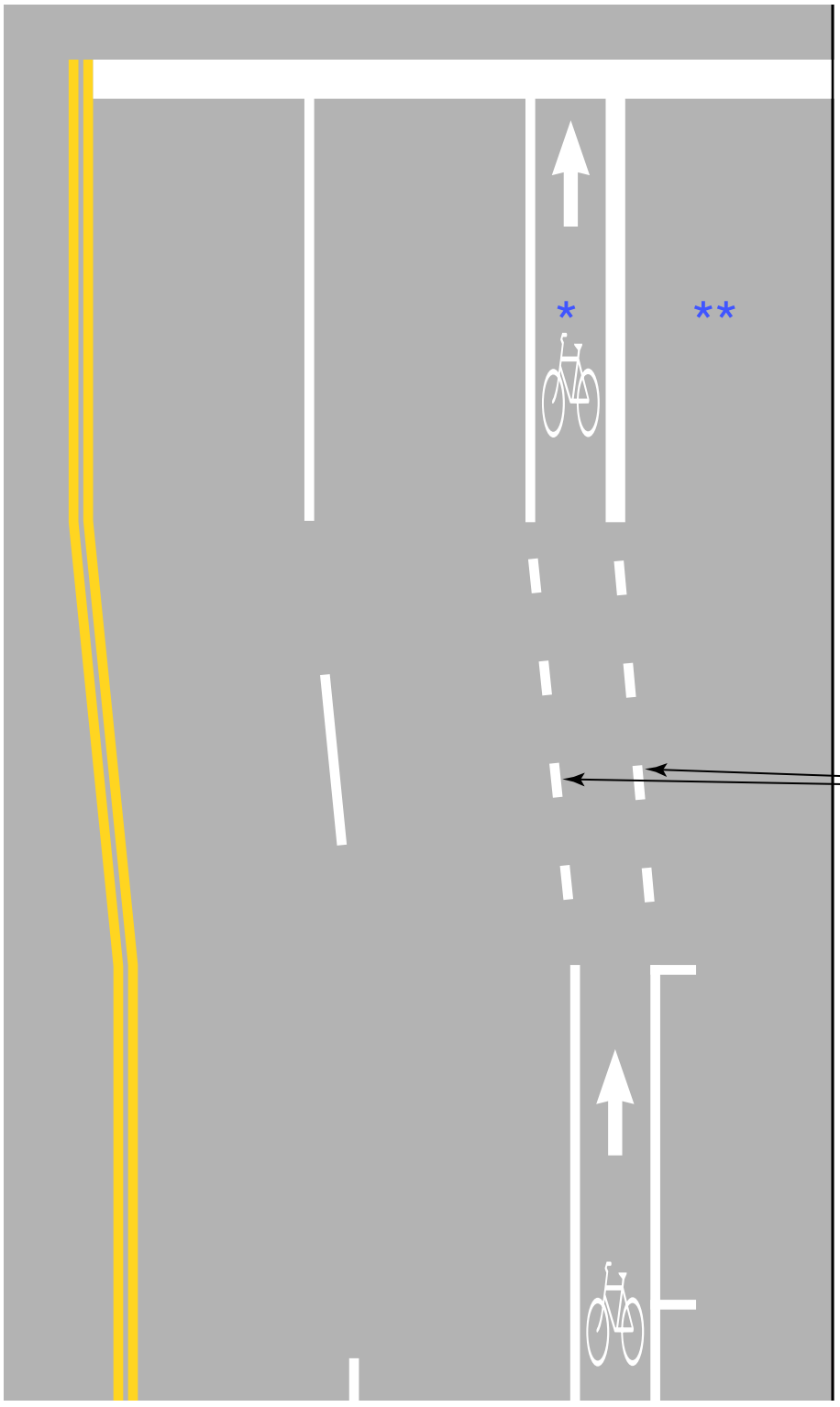


Figure 9C-4. Example of Bicycle Lane Treatment at Parking Lane into a Right Turn Only Lane SHA



Note:

* For pavement markings of the pocket lane, see Maryland State Highway Administration's Bicycle and Pedestrian Guidelines

** See Chapter 3B for pavement marking arrow use.

Dotted lines are optional

R4-4 at beginning of right turn only lane

Figure 9C-5. Example of Pavement Markings for Bicycle Lanes on a Two-Way Street

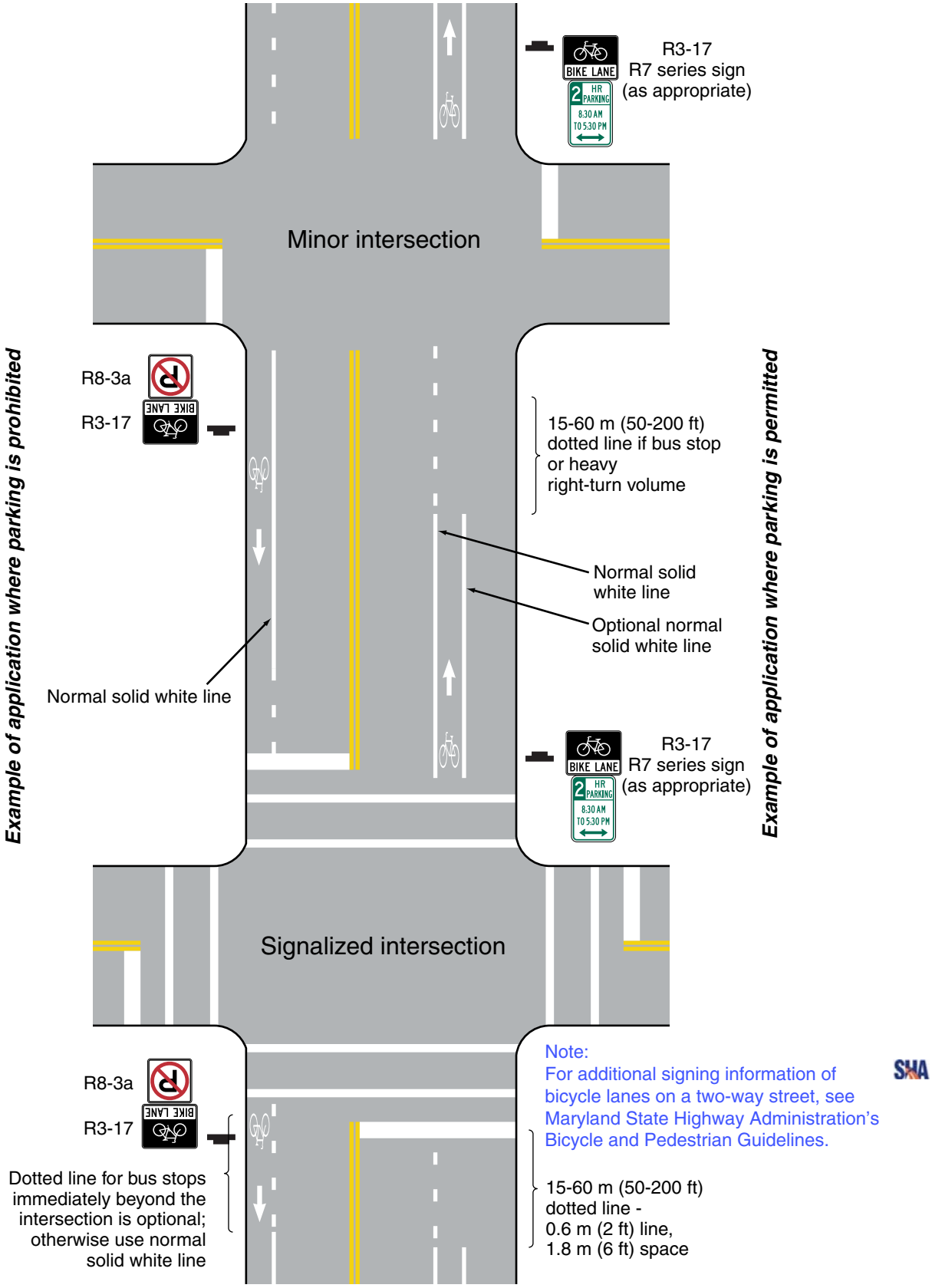


Figure 9C-6. Example of Optional Word and Symbol Pavement Markings for Bicycle Lanes

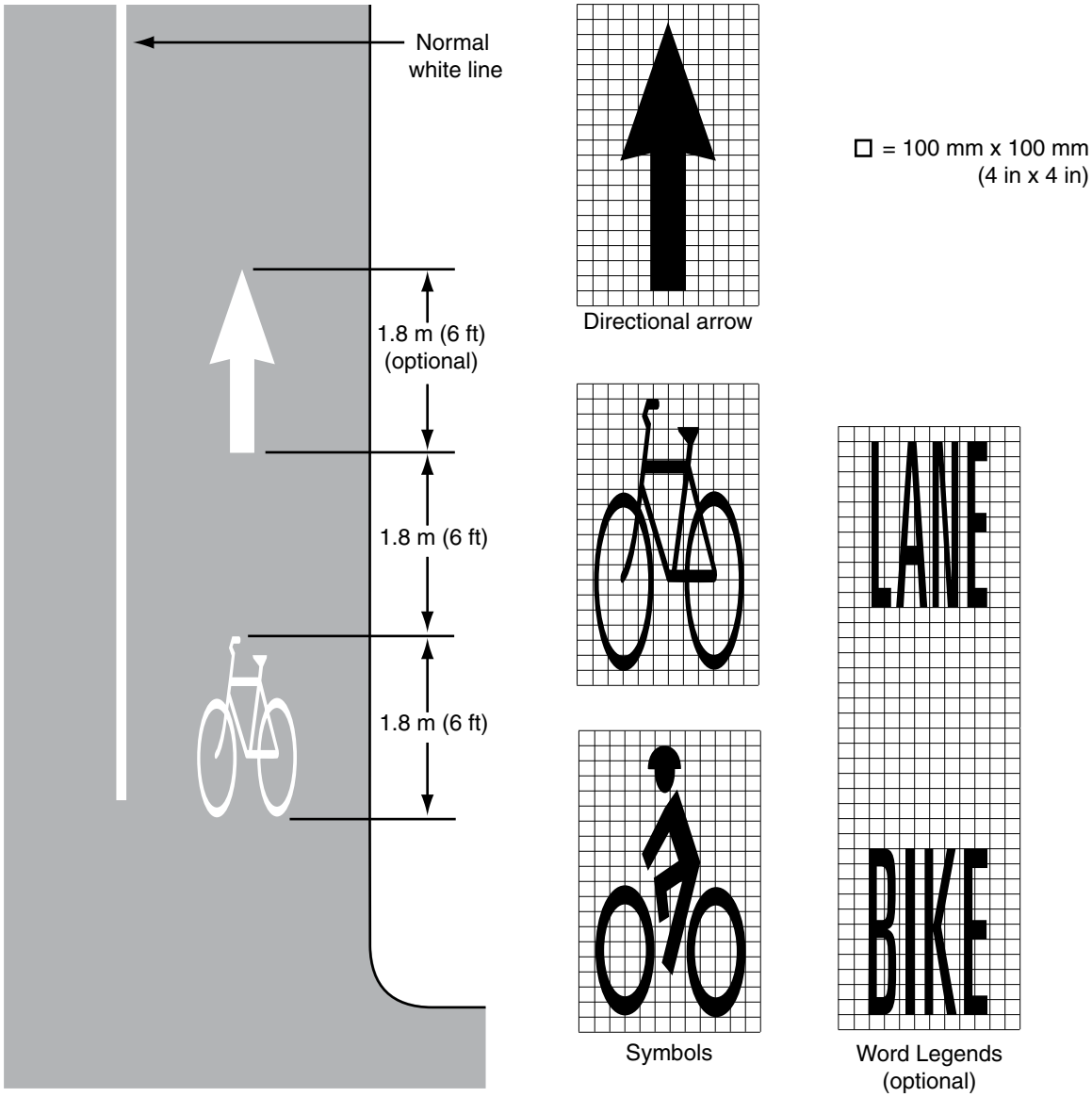


Figure 9C-7. Example of Bicycle Detector Pavement Marking

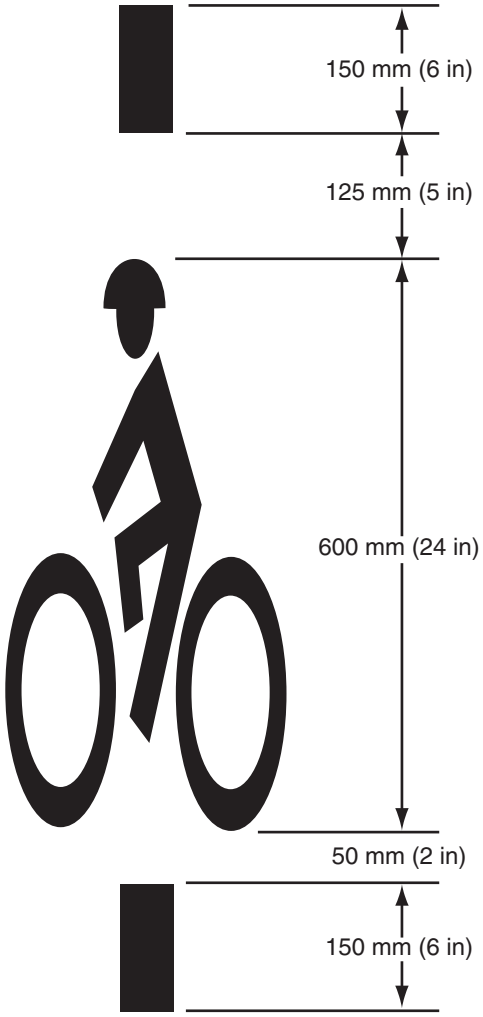
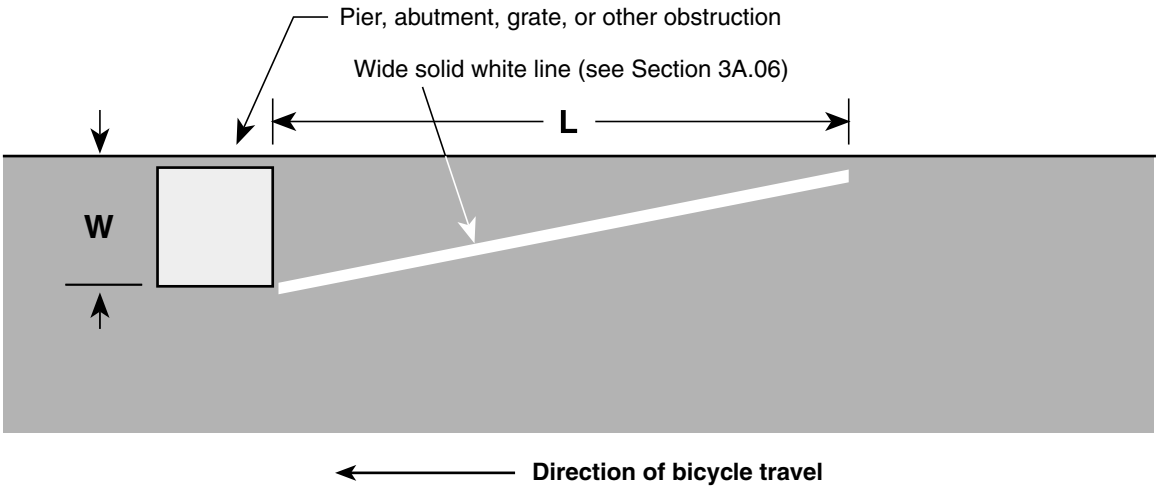


Figure 9C-8. Example of Obstruction Pavement Marking



For metric units:
L = 0.6 WS , where S is bicycle approach speed in kilometers per hour

For English units:
L = WS , where S is bicycle approach speed in miles per hour